THE DER UPDATE

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Distributed Energy Resources...the Power of Choice

Industry News

Pepco Purchases Demand Management Service

Pepco Energy Services, an energy service and product provider, has signed a contract with Powerweb Technologies, a company that designs, develops, installs and operates Internet-based information services and control systems, to purchase its Omni-Link® Internet portal. Omni-Link® will allow Pepco's large commercial and industrial customers to monitor their energy prices in real time, curtail their facility loads, control new smart device technologies, and transact energy back to the marketplace from a single Internet gateway. Customers will be able to bid demand reductions in the day-ahead market and participate in the PJM Interconnection's emergency response program. Powerweb president, Lothar E.S. Budike Jr. said, "with the Omni-Link's® ability to monitor real-time spot market prices and control distributed resources based on price, an energy supplier such as Pepco Energy Services can have a competitive advantage in the marketplace."
Powerweb Technologies and Pepco Energy Services Press Release, March 25

DTE and PowerCold Cogeneration Projects

Power Sources, Inc., a subsidiary of PowerCold Corporation that designs and markets cogeneration systems, and DTE Energy Technologies, a supplier of energy-related technologies and services, have entered an agreement to develop onsite cogeneration projects. DTE Energy Technologies estimates that the joint effort can generate at least $20 million in projects in the northeastern United States within the next three years. "The demand for onsite cogeneration units is growing steadily. Businesses need and want reliable power delivered in a cost-effective manner. This is what we are offering," stated Rick Diloia, district manager of DTE Energy Technologies.
PowerCold Press Release, March 21

Verizon Buys 7 UTC Fuel Cells

UTC Fuel Cells announced on March 20 that Verizon has purchased seven of its PC25™ fuel cell power plants to provide primary power for a call-routing center on Long Island, New York. Each fuel cell can produce 200 kW of electricity and 900,000 Btus of usable heat, and combined will generate 1.4 MW of electricity. They will be installed in a 332,000 square-foot facility in Garden City. In addition, Verizon plans to install four natural gas powered generators to operate in parallel with the fuel cells as a hybrid system to serve as backup power. The hybrid system will generate up to 4.4 MW of power. According to UTC, the installation of the company's units at the Verizon facility will form the largest fuel cell installation in the world.
UTC Press Release, March 20

DOE News

EPRI's VII DR Conference and Exhibition

EPRI's VII distributed resource (DR) conference and exhibition was held on March 20-22, 2002 in Dallas, Texas. The speakers addressed three main topic areas – technology, business, and regulation. The sessions covered fuel cells, microturbines, regulations, applications, and other critical DR areas, including the use of DR for grid security. More than 100 people attended the conference.

The conference included several sessions on the use of distributed generation for grid support. Jim Torpey, First Energy Technologies, presented a paper titled "Valuing the Locational Benefits of Distributed Resources in the Grid" and Peter Daly, Power Systems Engineering, Inc., gave a presentation on "Case Study of Engines and Turbines for Grid Support." Phil Barker, EPRI – PEAC, presented EPRI's work on the potential and economic feasibility of microgrid based power systems. In addition, there were technical manufacturer's panels on fuel cell, microturbine, and internal combustion engine technologies.

The Department of Energy and the National Laboratories had display panels at the exhibit sessions. The National Renewable Energy Laboratory, Sandia National Laboratory, and Oak Ridge National Laboratory shared a display booth and presented materials on the testing at the DOE laboratories.

DisGen 2002 Conference in Bangalore, India

Distributed energy resources are expected to play a major role in providing energy to the population of developing countries. However, these countries have generally relied on a centralized distribution network. As a result there are persistent power outages incompatible with high tech industrial development. Furthermore, a sizable part of the rural population receives only marginal service or is not even connected to the grid. To

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*Many Colorado farmers are trying to increase profit margins over the just-break-even point with renewables.**

Financing Distributed Generation

A recent article in *Energy Engineering: Journal of the Association of Energy Engineers* discusses a wide range of financing options for distributed generation. Distributed generation (DG) requires an upfront cost that is recovered through revenues or savings over time. The article introduces to the DG project engineer the cost of capital and financing structures and helps them develop realistic expectations. Several of the financing mechanisms discussed include: appropriations, debt (commercial bank loan), mortgage, home equity loan, limited partnership, vendor financing, general obligation bond, revenue bond, lease, energy savings performance contract, utility programs, chauffage (end-use purchase), and grants. Several financial strategies for businesses are also discussed including: venture capital, informal investors, bank and debt financing, and the stock market.

One example of financing, the home mortgage or home equity loan option, has several advantages to making the economics of small-scale DG work. Interest rates on home mortgages are tax deductible, resulting in a lower effective project cost. There are also residential energy efficiency improvement loans of up to $15,000, which are below market interest rates.

Another example is vendor financing, which is common among energy technologies. Vendor financing, where a third party such as a bank is often the actual source of financing, offers an easy, low cost solution and is an effective way for the supplier to stimulate markets. Large companies may use this type of financing, but is most suitable for small projects in the $25,000 to $400,000 range.

Chauffage is an agreement where the customer purchases the electricity, heating, or cooling of the DG project instead of the actual prime mover itself. This allows the customer not to be burdened with development and ongoing operation of the DG project and the risk of non-performance falls totally on the owner/operator of the equipment.

The stock market is one of the examples given in the article of financing DG businesses. With no interest and no requirement to repay, the stock market is the ultimate solution of business financing. The DG company works with a team of underwriters on the initial public offering (IPO). The underwriters work with regulators to determine the initial price and, in some states, verify the financial or technical viability of the company. According the article, nearly $3 trillion was invested in socially responsible funds in 2000, nearly 400 percent higher since 1995—DG may benefit from this trend.
March 23, Energy Engineering; Journal of the Association of Energy Engineers

jumpstart widespread application of distributed generation and storage in India, the Confederation of Indian Industry convened a conference on March 7-9, in Bangalore, the "Silicone Valley of India". Participants in DisGen 2002 included representatives of companies providing generation equipment, utilities, state energy boards, and university researchers. An overview of distributed energy technologies given by Dr. Imre Gyuk of DOE pointed out the crucial role of DER in assuring power quality and reliability for digital industries on the one hand, and for providing affordable basic power to remote rural sites. A panel discussion at the end of the conference developed a number of resolutions including a call for State Governments to develop policy guidelines that involve distributed power generation as an integral part of power sector reforms, and a recommendation to develop power parks for high tech industries.

UTRC Visits ORNL

Tom Rosfjord, Tim Wagner, and Michael Haines from the United Technologies Research Center (UTRC) in East Hartford, Connecticut visited the Oak Ridge National Laboratory to discuss materials issues related to DER programs. One of the subjects of interest and discussion was advanced materials for microturbine recuperators, as a follow-up to discussions initiated at the DOE/CETC/CANDRA Workshop on Microturbine Applications, held in January at

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DG Case Study

Pig Waste-A New Cash Crop
Gary Swanson is using an abundant source of renewable fuel to power his Colorado ranch. Hog waste. With the help of state and federal financing, Swanson has installed the nation's first electrical generation system that uses methane from live-stock waste, or biogas, to fuel a small turbine. This biogas turbine combined with a natural gas fired engine produces about 40 percent of the electricity to run he hog farm. Elec-tricity bills for comparable farms reach $10,000 a month; Swanson's bill is $3,500. The 5,000 hogs on his farm produce 12,000 gallons of waste a day which is converted to about 40,000 cubic feet of methane in an underground anaerobic digester. The $375,000 system not only helps Swanson save money, but also comply with Amendment 14, a Colorado hog farm initiative regulating the impacts on air and water quality.
Denver Post, March 24

*By renting out land for a wind farm, property owners make about $2,000-$3,000 per year for each wind turbine.**

the University of Maryland. Participants were interested in continued efforts to develop low cost materials with improved performance, an in-depth analysis of water-vapor corrosion effects in turbine exhaust environments, and the new microturbine materials test facility being built on the platform of a Capstone 60KW microturbine.

ORNL Personal Chair-Elect

H.T. Lin of Oak Ridge National Laboratory has been elected as Chair-Elect of Engineering Ceramics Division of the American Ceramic Society for the period of 2002-2003. The Engineering Ceramics Division has approximately 2000 members and is the second largest division in the American Ceramic Society. H.T. Lin is also the program chair of the 27th International Conference on Advanced Ceramics & Composites which is held in conjunction with the Electronics Division Fall Meeting of the American Ceramic Society in Cocoa Beach, Florida, January 26-31, 2003. The Cocoa Beach Meeting is a preeminent international technical meeting on advanced ceramics and composites.

ORNL Ceramic Research

ORNL has established extensive sets of mechanical property data for silicon nitride and silicon carbide ceramics of interest to the microturbine community. These data sets, which are in the form of electronic spreadsheets, have now been supplied to UTRC, GE, Ingersoll-Rand, and Capstone. Based on conversations with these companies, other candidate ceramics have been identified to for the database. In some cases, additional testing has been implemented to supplement the data.

Calendar of Events

APRIL 2002			
2-3	Implementing Renewable Energy Projects	Washington, DC	Gail Norby, (303) 526-5528, gail@imaginittech.com
3-4	The 2002 Hydrogen Investment Forum	Washington, DC	www.intertechusa.com
8	Micropower "Get Connected" Workshop	Toronto, Ontario	www.micropower-connect.org
8-9	Colorado Wind and Distributed Energy: Renewables for Rural Prosperity	Denver, CO	www.state.co.us/oemc
8-9	Fuel Cells and Distributed Power Conference	Stamford, CT	www.bccresearch.com/fuel_cells
10-11	Fuel Cell Roadmap Workshop	College Park, MD	Jan Brinch 410-290-0370
15-17	EESAT 2002, Electric Energy Storage—Applications and Technologies	San Francisco, CA	www.sandia.gov/EESAT; Dr. Imre Gyuk (202) 586-1482
15-17	EEI Strategic Issues Conference	Orlando, FL	www.eei.org
15-17	American Power Conference	Chicago, IL	www.apc-pennwell.com
16-17	Second DOE/UN International Conference and Workshop on Hybrid Power Systems	Charlotte, NC	www.netl.doe.gov click on "events"
21-23	4th Annual Small Fuel Cells Conference	Washington, DC	custserv@knowledgefoundation.com
23-24	Reciprocating Engine Peer Review	Chicago, IL	Brian Marchionini 202-406-4109
30-May2	Houston Energy Expo	Houston, TX	www.nesanet.org
30-May2	Thermally Activated Technologies Peer Review	Nashville, TN	Jan Brinch 410-290-0370

*Farmers in southeast Colorado are trying to snap a severe economic depression in the agricultural community using sunflower seeds-to make lubricating oils.**

Calendar of Events

MAY 2002			
1-3	External Combustion Engines—New Strategies for Efficient, Green Power Generation	Los Angeles, CA	chuck@intertechusa.com
2	Green Power: Turn it On! Getting to 10% Conference	Harrisburg, PA	Maryanne Daniel; 215-656-6964
6-7	Securing the Energy Infrastructure: Essential Strategies	Washington, DC	www.kemaseminars.com
6-8	Interconnecting Distributed Generation to Utility Distribution Systems	Madison, WI	http://epdweb.engr.wisc.edu/brochures/a873.html
6-10	2002 On-Site Power Generation School	Dallas, TX	www.egsa.org/meetings/schools.htm
12-14	American Gas Association Operations Conference	Chicago, IL	www.aga.org
12-15	The 8th National Clean Cities Conference and Expo	Oklahoma City, OK	www.ccities.doe.gov/conference.shtml
14-15	Distributed Generation Technology Seminar	Andover, MA	www.basler.com
14-16	E-Vision 2002: Shaping Our Future by Reducing Energy Intensity in the U.S. Economy	Arlington, VA	Jeff Dowd; jeff.dowd@ee.doe.gov
20	Congressional Fuel Cell Expo	Washington, DC	www.usfcc.com
20-21	Renewable Energy	Houston, TX	www.cbinet.com
23-24	FEMP DER Workshop	Atlanta, GA	Lisa Hollingsworth 404-562-0569
JUNE 2002			
2-5	Energy 2002 Workshop and Expo: Hot Challenges, Cool Solutions	Palm Springs, CA	(703) 243-8343, www.energy2002.ee.doe.gov
6-7	West Coast Energy Management Congress	Anaheim, CA	(703) 243-8343, www.aeecenter.org
16-18	National Accounts Conference and Exhibition (American Gas Association)	Nashville, TN	TheGasChoice.com
25-26	DER FEMP Workshop	Chicago, IL	Marion Rawson 202-479-2748
26-29	Building Energy 2002 and the Mid-Atlantic Sustainability Conference	East Brunswick, NJ	www.nesea.org
AUGUST 2002			
18-23	Summer Study on Energy Efficiency in Buildings	Pacific Grove, CA	www.aceee.org

** Source: Denver post, March 24*